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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/810,792

03/26/2004

Kazuo Sugimoto

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Brinks Hofer Gilson & Lione
P.O. Box 10395
Chicago, IL 60610

EXAMINER

HOLDER, ANNER N

ART UNIT

PAPER NUMBER

2621

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/810,792

Applicant(s)

SUGIMOTO ET AL.

Examiner

Anner Holder

Art Unit

2621

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03/26/04 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. ____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 07/24/06;04/03/06;03/26/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: ____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 101

1. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2. Claims 6 and 12 are rejected under 35 U.S.C. 101 because claims 6 and 12, define, a “program which causes a computer to function as motion compensation prediction” embodying functional descriptive material. However, the claim does not define a computer-readable medium or computer-readable memory and is thus non-statutory for that reason (i.e., “When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized” – MPEP 2106.) The scope of the presently claimed invention encompasses products that are not necessarily computer readable, and thus NOT able to impart any functionality of the recited program. The examiner suggests amending the claim(s) to embody the program on “computer-readable medium” or equivalent; assuming the specification does NOT define the computer readable medium as a “signal”, “carrier wave”, or “transmission medium” which are deemed non-statutory (refer to “note” below). Any amendment to the claim should be commensurate with its corresponding disclosure.

Note:

A “signal” (or equivalent) embodying functional descriptive material is neither a process nor a product (i.e., a tangible “thing”) and therefore does not fall within one of the four statutory

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classes of § 101. Rather, “signal” is a form of energy, in the absence of any physical structure or tangible material.

Should the full scope of the claim as properly read in light of the disclosure encompass non-statutory subject matter such as a “signal”, the claim as a whole would be non-statutory. In the case where the specification defines the computer readable medium or memory as statutory tangible products such as a hard drive, ROM, RAM, etc, as well as a non-statutory entity such as a “signal”, “carrier wave”, or “transmission medium”, the examiner suggests amending the claim to include the disclosed tangible computer readable media, while at the same time excluding the intangible media such as signals, carrier waves, etc.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 2, 6-8, 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Murakami et al. (Murakami) US 6,272,177 B1.

5. As to claim 1, Murakami teaches a video encoding apparatus comprising motion compensation prediction means for generating a predicted image of a coding target frame by dividing the coding target frame into a plurality of blocks, [Col. 1 Lines 45-46 and 66-67] generating a prediction reference image that are formed by providing interpolated pixels which are produced by interpolation between integer pixels from integer neighborhood pixels in a predetermined region of a reference frame, [Col. 1 Lines 45-46; Col. 2 Lines 4-7] and

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determining a motion vector for the prediction reference images for each of the plurality of blocks, [Colo. 1 Lines 40-46] the motion compensation prediction means having: complexity extraction means for extracting complexity information which indicates a degree of complexity of movement from the reference frame for each of the plurality of blocks; [Col. 1 Lines 40-43; Col. 9 Lines 14-23; Col. 13 Lines 50-54; The prediction error is clearly a measure for the motion complexity.] and predicted image generating means for generating the predicted image by using the prediction reference image to which filtering pixels are provided in accordance with the complexity information on the basis of a predetermined rule which increases the number of the filtering pixels which have pixel values produced by applying a low-pass filter of which spectral band-pass in low frequency band is narrow among a plurality of low-pass filters with different high-frequency cutoff characteristics to neighborhood integer pixels. [Col. 1 Lines 56-62; Col. 10 Lines 25-33; (control of filter effects neighboring pixel based on a predetermined rule); Col. 13 Lines 11-36; Fig. 12 – illustrates filter cutoff]

6. As to claim 2, see rejection of claim 1, except this is a claim to an encoding method with the same limitations as claim 1.

7. As to claim 6, see rejection of claim 1, except this is a claim to an encoding program with the same limitations as claim 1.

8. As to claim 7, see rejection of claim 1, except this is a claim to a decoding apparatus with the same limitations as claim 1. Decoding apparatus performs the inverse function of the encoding apparatus having the same units as the local decoder (5) in Fig. 1 and performing the same tasks of a remote decoder.

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9. As to claim 8, see rejection of claim 1, except this is a claim to a decoding method with the same limitations as claim 1.

10. As to claim 12, see rejection of claim 1, except this is a claim to a decoding program with the same limitations as claim 1.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 3, 5, 9, 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murakami et al. (Murakami) US 6,272,177 B1 in view of Sun et al. (Sun) US 2002/0146072 A1.

13. As to claim 3, Murakami teaches the complexity extraction means uses an absolute value of a differential motion vector. [Col. 1 Lines 39-49]

Murakami does not explicitly teach the use of a block surrounding the block for which the complexity information is to be extracted as the complexity information.

Sun teach the use of a block surrounding the block for which the complexity information is to be extracted as the complexity information. [Pg. 4 ¶0050-0051]

It would have been obvious at the time the invention was made to combine Sun's teaching of using adjacent block information with the coding device of Murakami, to optimize image processing by utilizing the similar coding parameters of the adjacent blocks and skipping unnecessary redundant functions.

14. As to claim 5, see rejection of claim 3 above.

15. As to claim 9, see rejection of claim 3, except this is a claim to decoding method with the same limitations as claim 3.

16. As to claim 11, see rejection of claim 3, except this is a claim to decoding method with the same limitations as claim 3.

17. Claims 4 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murakami et al. (Murakami) US 6,272,177 B1 in view of Shen et al. (Shen), "Adaptive Motion Vector Resampling for Compressed Video Down Scaling", IEEE, 1997

18. As to claim 4, Murakami teaches limitations of claim 2.

Murakami does not specifically teach conversion step in which conversion means converts predicted residual difference image produced by calculating a difference between the coding target frame and the predicted image into a set of coefficients on the basis of a predetermined conversion rule, wherein the complexity extraction means use the numbers of non-zero coefficients among the coefficients in a block surrounding the blocks for which the complexity information is to be extracted as the complexity information.

Shen teaches conversion step in which conversion means converts predicted residual difference image produced by calculating a difference between the coding target frame and the predicted image into a set of coefficients on the basis of a predetermined conversion rule, wherein the complexity extraction means use the numbers of non-zero coefficients among the coefficients in a block surrounding the blocks for which the complexity information is to be extracted as the complexity information. [Pg 772 Col. 2 ¶ 2]

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the use of non-zero coefficients for prediction teachings of Shen with

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the coding device of Murakami, allowing for more accurate prediction of the motion vector, the quantities are proportional to the spatial activity measurement. [Pg 772 Col. 2 ¶ 2]

19. As to claim 10, Murakami teaches limitations of claim 8.

Murakami does not specifically teach conversion step in which conversion means converts predicted residual difference image produced by calculating a difference between the coding target frame and the predicted image into a set of coefficients on the basis of a predetermined conversion rule, wherein the complexity extraction means use the numbers of non-zero coefficients among the coefficients in a block surrounding the blocks for which the complexity information is to be extracted as the complexity information.

Shen teaches conversion step in which conversion means converts predicted residual difference image produced by calculating a difference between the coding target frame and the predicted image into a set of coefficients on the basis of a predetermined conversion rule, wherein the complexity extraction means use the numbers of non-zero coefficients among the coefficients in a block surrounding the blocks for which the complexity information is to be extracted as the complexity information. [Pg 772 Col. 2 ¶ 2]

20. It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the use of non-zero coefficients for prediction teachings of Shen with the coding device of Murakami, allowing for more accurate prediction of the motion vector, the quantities are proportional to the spatial activity measurement. [Pg 772 Col. 2 ¶ 2]

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anner Holder whose telephone number is 571-270-1549. The examiner can normally be reached on M-Th, M-F 8 am - 3 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mehrdad Dastouri can be reached on 571-272-7418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ANH 7/18/07

Mehrdad Dastouri
MEHRDAD DASTOURI
SUPERVISORY PATENT EXAMINER
TC 2600